

## Claims

1. A method for producing canthaxanthin comprising steps of: inducing mutation in astaxanthin-producing microorganisms in which the nucleotide sequence of DNA corresponding to its 16S ribosomal RNA is substantially homologous to the nucleotide sequence as shown in SEQ ID NO: 1; obtaining canthaxanthin-producing microorganisms by selecting a mutant having a higher ratio of canthaxanthin produced (% by mass) relative to the amount of carotenoid produced than that of a parent strain; and recovering canthaxanthin or a carotenoid mixture comprising canthaxanthin from the culture product of the canthaxanthin-producing microorganisms.

2. The method according to claim 1, wherein the ratio of canthaxanthin produced from the canthaxanthin-producing microorganisms is at least 40% by mass relative to the total amount of carotenoid produced.

3. The method according to claim 1, wherein each of the ratios of  $\beta$ -cryptoxanthin, zeaxanthin, 3-hydroxyechinenone, asteroideone, adonirubin, adonixanthin, and astaxanthin produced from the canthaxanthin-producing microorganisms is less than 20% by mass relative to the total amount of carotenoid produced.

4. The method according to any one of claims 1 to 3, wherein the astaxanthin-producing microorganisms are selected from the E-396 strain (FERM BP-4283) and a mutant thereof, and the A-581-1 strain (FERM BP-4671) and a mutant thereof.